

WHAT IS CLAIMED IS:

1. An electrode used for a non-aqueous electrolyte secondary battery, which comprises a current collector of a metallic material which is not alloyed with Li and dots of a metallic material which is able to be alloyed with Li and is formed in a form of pattern on the current collector,

wherein the diameter of each dot is 1-500 micrometers, and the occupancy rate of the dots on the current collector is 50 - 90%.

2. The electrode according to claim 1, wherein the height of said dot is 1-15 micrometers.

3. The electrode according to claim 1 or 2, wherein the metallic material able to be alloyed with Li is one selected from the group consisting of IVb group elements (elements of group 14) and alloy thereof.

4. The electrode according to claim 3, wherein the metallic material able to be alloyed with Li is an alloy comprising a) at least one element selected from the group consisting of Bi, Cu, Fe, Ni, Zn, and Ag and b) at least one element selected from IV group elements.

5. The electrode according to any one of claims 1 to 4, wherein the interval of each dot is 5 micrometers or more.

6. The electrode according to any one of claims 1 to 5, wherein the dot pattern of the metallic material able to be alloyed with Li is formed on a current collector having a concave-convex pattern.

7. The electrode according to any one of claims 1 to 6, wherein each of the dots is porous.

8. A non-aqueous electrolyte secondary battery which comprises positive and negative electrodes, the negative electrode comprising a current collector of a metallic material which is not alloyed with Li and dots formed in a form of pattern on the current collector is of a metallic material which is able to be alloyed with Li,

wherein the diameter of each dot is 1-500 micrometers, and
the occupancy rate of the dots on the current collector is 50 - 90%.

9. The non-aqueous electrolyte secondary battery according to claim 8, wherein the height of said dot in the negative electrode is 1-15 micrometers.

5 10. The non-aqueous electrolyte secondary battery according to claim 8 or 9, wherein the metallic material able to be alloyed with Li is one selected from the group consisting of IVb group elements (elements of group 14) and alloy thereof.

10 11. The non-aqueous electrolyte secondary battery according to claim 10, wherein the metallic material able to be alloyed with Li is an alloy comprising a) at least one element selected from the group consisting of Bi, Cu, Fe, Ni, Zn, and Ag and b) at least one element selected from IV group elements.

12. The non-aqueous electrolyte secondary battery according to any one of claims 8 to 11, wherein the interval of each dot is 5 micrometers or more.

15 13. The non-aqueous electrolyte secondary battery according to any one of claims 8 to 12, wherein the dot pattern of the metallic material able to be alloyed with Li is formed on a current collector having a concave-convex pattern.

14. The non-aqueous electrolyte secondary battery according to any one of claims 1 to 6, wherein each of the dots is porous.

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